

This Method of Operation was prepared from Issue 10 of Drawing ES-240206.

#### METHOD OF OPERATION

Panel System - Link and Selector Time Alarm Circuit - Using Interrupter and Relays.

#### DEVELOPMENT

##### 1. PURPOSE OF CIRCUIT

- 1.1 To produce an alarm after a predetermined minimum time interval has elapsed. The district selector time alarm operates if the calling subscriber fails to disconnect or if the district fails to return to normal on answered calls after the called subscriber has disconnected, or if the selector remains in the overflow or tell-tale position.
- 1.2 The coin control circuit time alarm operates if the circuit fails to collect or return the coin, or if for any other reason it fails to return to normal.
- 1.3 The link circuit time alarm operates if the link fails to find a sender, fails to advance out of the position for hunting a sender, fails to advance out of the await district position, or fails to advance into position for hunting a district after being dismissed from the call.
- 1.4 This circuit may also be used in connection with final circuits arranged to give an alarm after a certain time interval if the called subscriber fails to disconnect; or with sender selector circuits arranged for a time alarm in case of failure to find a sender; or for other purposes for which a time alarm is required.

##### 2. WORKING LIMITS

- 2.1 None.

#### OPERATION

##### 3. PRINCIPAL FUNCTIONS

- 3.1 If a lead to selector, coin control or link circuits remains grounded for more than a certain minimum time interval, the circuit lights a lamp at the frame, operates aisle pilot alarms, when furnished, and brings in floor alarm board alarms.

- 3.2 As soon as the interrupter contact closes after the lead becomes grounded, the circuit to other selector frames or link groups is opened so that ground supplied by them does not affect this circuit until the circuit being timed has been disposed of.

#### 4. CONNECTING CIRCUITS

- 4.1 Any district selector circuit.
- 4.2 Link circuit for connecting district and sender.
- 4.3 Coin control circuit.
- 4.4 Floor alarm board fuse and time alarm circuit.
- 4.5 Sender selector arranged for time alarm.
- 4.6 Miscellaneous alarm circuit.
- 4.7 Final circuit which does not have delayed disconnect feature for called subscriber failing to disconnect.

#### DESCRIPTION OF OPERATION

5. When a time alarm lead is grounded, relay (PS) or (PS1) (Fig. 1) or relay (LA) (Fig. 2) operates, operating relay (A) as soon as interrupter (TA) closes its front contact. Relay (A) locks up under control of the (S) or (S1) relay and the (PS), (PS1) or (LA) relay, and operates relay (SL). Operation of relay (SL) cuts off the operating path of the (PS), (PS1) or (LA) relays, thereby preventing operation of any other (PS), (PS1) or (LA) relay associated with the same interrupter. The operated (PS), (PS1) or (LA) relay locks up to ground from the selector, coin, or link circuit and remains operated as long as this ground is maintained. Relay (SL) is slow acting to permit relay (PS), (PS1) or (LA) to lock up before its operating path is opened, in case the front contact of the interrupter is closed when ground is first connected. If the minimum time period is the same as the period of the interrupter, "X" wiring is furnished, and closure of the back contact of the interrupter operates relay (SC), which locks up under control of relay (PS), (PS1) or (LA) and relay (S) or (S1). Operation of relay (SC) operates relay (S) or (S1) which locks up in series with the (S), (CN) or (L) lamp and under control of relay (PS), (PS1) or (LA), releases relays (SC) and (A), and operates relay (TA) (Fig. 6) to light an aisle pilot lamp (Fig. 7) and a lamp in the floor alarm board and to operate aisle pilot and floor alarm board audible alarms. When Figs. 4 and 5 are furnished,



operation of relay (S) or (S1) lights lamps at the floor alarm board and main alarm board or trouble desk and operates the associated audible alarms. The release of relay (A) releases relay (SL) which restores the operating path of the (PS), (PS1) or (LA) relays, permitting them to operate on ground from other selectors or link groups. When ground is removed from the time alarm lead to selectors, coin control circuits or link circuits, relay (PS), (PS1) or (LA) releases, releasing relay (S) or (S1), which extinguishes the lamps and restores the circuit to normal. When the minimum time required is some multiple of the period of the interrupter, "Y" wiring and apparatus is furnished, one (I-1) and one (I-2) relay being furnished for each additional multiple of the interrupter period. In this case, closure of the back contact of the interrupter, after relay (A) is operated, operates the first relay (I-1), which locks up and closes a path for operating the first relay (I-2) when the front contact of the interrupter again closes. Relay (I-2) locks up and opens the locking path of relay (I-1) and, if the timer period is only twice the period of the interrupter, closes the path for operating relay (SC) when the back contact of the interrupter again closes. If the time period is more than twice the period of the interrupter, the operation of the first relay (I-2) closes a path for operating the second relay (I-1), instead of relay (SC), when the back contact of the interrupter again closes, and opens the locking path of the first relay (I-1). The second relay (I-1) locks up, opens the locking path of the first relay (I-2) and closes a path for operating the second relay (I-2) when the front contact of the interrupter again closes. The second relay (I-2) may close a path for operating relay (SC) when the back contact of the interrupter again closes, or it may close a path for operating a third relay (I-1), depending upon the time period required. This sequence of operations is repeated as many times as required, depending upon the number of (I-1) and (I-2) relays provided. Operation of the last (I-2) relay in the series closes a path for operating relay (SC) when the back contact of the interrupter again closes. When relay (SC) has operated, the operation of the circuit is the same as described above for "X" wiring.

#### 6. COIN CONTROL DISTRICT ALARMS (FIGS. 8 AND 9)

Operation of Figs. 7 and 8 is the same as described in paragraph 5, except that a common lamp (S) is furnished at the frame for both Figs. Operation of either relay (S) or relay (S1) lights lamp (S).

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